

APPENDIX A

GLOSSARY, ABBREVIATIONS, ACRONYMS, TERMS, and SYMBOLS

Aliphatic: Carbon atoms linked in a chain-like formation; includes alkanes and alkenes^(LUFT88).

Alkanes: Hydrocarbon compounds (e.g. $\text{CH}_3\text{CH}_2\text{CH}_3$) that do not contain double or triple bonds between carbons. Alkanes can form straight chains or cyclic structures such as cyclo-hexane^(LUFT88).

Alkenes: Straight chain hydrocarbon compounds that contain one or more double or triple bonds between carbons^(LUFT88).

Air Sparging: A method of stripping VOCs from groundwater. Air is forced through well screens which are typically submerged some distance below the water table. The bubbling action strips VOCs from the groundwater and generally forces these contaminants into the overlying, unsaturated soils. Air sparging can also enhance bioremediation. Vapor extraction is routinely implemented with air sparging as a means to control and remove the vapor phase VOCs from the soil column^(CUCF-FS#5).

Air Stripping: A method of removing VOCs from groundwater wherein the contaminated groundwater is removed from the ground (via a pump) and subjected to an air stream. This method typically employs a media (with high surface area) that the water passes over (thereby increasing the available surface area) and a counter-current of air provided by a blower. VOCs are stripped from the water through mass transfer to the air where they are then either discharged to the atmosphere with regulatory approval from the Air Quality regulatory entity, or treated with one or more vapor phase treatment / capture systems.

Aromatic hydrocarbons: Compounds containing one or more benzene rings (a six carbon ring structure with alternating double bonds between carbons)^(LUFT88).

BCA: Bureau of Corrective Actions. An entity within the NDEP.

Bioremediation: A process in which microorganisms (i.e. bacteria) metabolize (break down) contaminants. As used herein, bioremediation typically refers to naturally occurring and/or enhanced metabolism of organic contaminants in soil, groundwater, aquifer material, or other media.

BTEX: Standard abbreviation for four common gasoline constituents (benzene, toluene, ethyl-benzene, and total xylenes). These four are routinely used as "indicator chemicals" for investigation of fuel releases as they: are volatile, mobile, and leachable; can produce vapors that are highly flammable and explosive; pose a serious threat to human health (i.e. they are known or suspected human carcinogens or neurotoxins); exhibit relatively high water solubilities; are readily adaptable to gas chromatography detection; and they have associated Maximum contaminant levels (MCLs) for drinking water^(LUFT89 & LUFT88).

DCNR: Department of Conservation and Natural Resources.

Diesel Fuel: Primarily comprised of straight-chain hydrocarbons (alkenes and alkanes) ranging in length from C_{10} to C_{23} . The majority of diesel fuel consists of C_{16} & C_{17} hydrocarbons. Diesel fuel may also contain some aromatic constituents (depending on the source and refining process), including benzene. The aromatic constituents generally account for less than 0.1 % of the total product^(LUFT88).

EPA Method 624:

EPA Method 8240:

EPA Method 8260:

eV: Electron volts. A measure of the ionization potential of individual chemicals.

Extractable:

FID: Flame ionization detectors use a hydrogen flame, instead of ultraviolet light, to measure organic vapor concentrations in air drawn through the sensing equipment. Each type of detector (PID, FID, ECD, HALL, etc.) is useful for certain applications, however, the user should be aware of the inherent limitations of each.

Portable field survey equipment which utilize an FID are routinely calibrated at the factory with respect to methane. These units then report the total concentration of organic vapors drawn past the FID. Because FIDs are calibrated to a methane standard, these units can sense the presence of methane whereas a PID cannot^(LUFT88).

Gasoline: A complex blend of more than 200 petroleum-derived chemicals (plus a few synthetic products added to improve fuel / engine performance and or air quality). The majority of gasoline components range from C₄ to C₁₂ hydrocarbons^(LUFT88).

GC/MS: Gas Chromatography (GC) provides a method for analyzing fuel hydrocarbons in soil and water. Although quantitatively accurate, Gas Chromatography involves assumptions regarding the identity of detected compounds^(LUFT88). One commonly employed method for verification of GC analyses is GC/MS. Use of Mass Spectroscopy (MS) enables an analyst to identify most compounds through comparison of the mass of an identified analyte to a library of masses of known compounds.

MCL: Maximum contaminant level. A federally promulgated action level for specific contaminants. The MCL is the maximum concentration for which a contaminant can be present in a drinking water source. Contaminants routinely measured at concentrations in excess of an MCL (given a certain margin of error for the analytical method used) in groundwater generally require corrective action.

Method 8015, modified for petroleum hydrocarbons:

mg/L: Milligram(s) per liter. A measure of the concentration of an analyte in a given liquid medium. Occasional referred to as parts per million (ppm) by volume.

mg/kg: Milligram(s) per kilogram. A measure of the concentration of an analyte in a given solid medium. Occasional referred to as parts per million (ppm) by weight.

NDEP: Nevada Division of Environmental Protection. An entity within the DCNR.

NPDES:

OVA: Organic vapor analyzer. A field survey instrument typically equipped with a flame ionization detector (FID) for field measurement of total volatile organic compounds in air.

Oxygenated Fuel:

PID: Photo ionization detectors use ultraviolet light detectors to measure organic vapor concentrations in air drawn through the sensing equipment. Each type of detector (PID, FID, ECD, HALL, etc.) is useful for certain applications, however, the user should be aware of the inherent limitations of each.

Portable, field survey equipment which utilize a PID are routinely calibrated to a select, calibration gas standard. These units then report the total concentration of ionizable compounds drawn past the PID lamp. Photo ionization responses vary from compound to compound and with different lamps. There are three standard PID lamps for use in the field survey equipment: (1) 9.5eV, 10.2eV, and 11.7eV. PID lamps are expressed in electron volts; the ionization potential of individual chemicals is likewise expressed in electron volts. Each lamp, therefore, provides a uniquely different dynamic range (window of response) within which select chemicals may be sensed^(LUFT88).

PRG:

Purge & Trap:

Reformulated Gasoline:

ug/L: Microgram(s) per liter. A measure of the concentration of an analyte in a given liquid medium. Occasional referred to as parts per billion (ppb) by volume.

ug/kg: Microgram(s) per kilogram. A measure of the concentration of an analyte in a given solid medium. Occasional referred to as parts per billion (ppb) by weight.

UIC: Underground Injection Control.

VOA: Volatile organic analysis. Also used to refer to the small, glass containers (typically 40 ml in size) routinely used for collection of water samples for analysis of VOC content.

VOCs: Volatile organic compounds.